

and of those born some 22 per cent. had died. Owing to the well-known connection of mental defect with a high death-rate it is probable that the latter would have contained more than the discovered proportion of mental defectives; (3) the possibility, indeed, the probability, that a number of unrecognized illegitimate children have been included. As Professor Fisher has shown, the illegitimate children of defective women tend to be rather more intelligent than the legitimate. It is impossible to make any accurate allowance for these influences but they can scarcely result in a true figure of less than 50 or 60 per cent. If such is the true figure when one parent is defective and one normal, the figure when both parents are defective, on any calculation according to multifactorial gene determination, is likely to be not less than 75 per cent.

For direct evidence regarding the results when both parents are defective—the situation to which the statement in my article referred—we have to consider data from abroad, in which, as Dr. Vernon pointed out in the last issue of the REVIEW, the standards and conditions of certification are unfortunately likely to differ.

Neglecting the high figures obtained by researches before 1920 (e.g. that of Goddard) we find Reiter and Osthoff giving 90·7 per cent. of siblings feeble-minded when the parents are (both) feeble-minded, Brugger 93·15 per cent. and Wildenskov 94·03 per cent. under the same conditions. These figures are too high, because the enquirers started with families from which one feeble-minded child had been referred. (On the other hand, they would be increased slightly by the inclusion of the propositi in those cases where only the siblings have been included.) Geneticists such as Haldane, Hogben and Penrose have evolved corrections for such selection when the mode of inheritance is known. In regard to such an obscure genetic mechanism I am not competent to apply the factorial method, but I estimate that it would reduce the above figures to 70-80 per cent.

Finally, I suggest that the interests of accuracy would be served by dealing with the feeble-minded and the low-grade defectives separately, and by removing from the calculation all those cases in which feeble-mindedness is obviously due to accident, birth injuries or inflammatory conditions. These two precautions are largely fulfilled by the same exclusion, for environmental effects are clearly recognized to play a larger part in low-grade defect than in feeble-mindedness. One of these conditions is satisfied by Brugger's work, for he excluded 49 clearly exogenous cases from his total of 254 cases before proceeding with the study of heredity.

These are some of the means by which Professor Haldane's timely demand for accuracy may be met in future enquiries in this field, but I submit that the fairest interpretation of the existing data indicates 75 per cent. of defectives among the

children arising from the intermarriage of defectives.

R. B. CATTELL.

Cotley Kiln, Longdown,
Exeter.

Aerogenics—a New Science

To the Editor, *Eugenics Review*

SIR,—Seldom does it fall to a scientist on the basis of a comparatively small amount of research to make the discovery of so important a new branch of science as that announced by Major Erich Suchsland, of the German Aviation Corps, in a striking article published in a recent number of the *Archiv für Rassen und Gesellschaftsbiologie*.^{*} Major Suchsland, in this article, brings together his own special discipline, air warfare, with the subject of eugenics, and creates from their union the new branch, which we have designated by the appellation given in our title. As a result of his studies he comes to the important conclusion that the selection caused by air warfare exerts a peculiarly beneficial influence upon the germ plasm of *Homo sapiens*.

His main findings may be listed under three main heads. According to his first thesis, the regions bombed from the air will usually be the thickest centres of population, hence the districts where the poor live, and hence (*sic*) those which have the least desirable equipment of hereditary material. The bombs, falling there, thus act as a direct genetic purge. Secondly, under the conditions of bombardment, thieves tend to come forth to steal, and anti-fascists and other genetically (*sic*) undesirable elements to foment disorder and otherwise take advantage of the state of disorganization; these elements, by exposing themselves more than the rest, will thus tend to become eliminated in greater numbers. Thirdly, the difficulties and state of stress caused by the bombing will be borne least well by the genetically inferior; in fact, such traits as nervous and mental diseases previously latent will tend to manifest themselves under these conditions, and the individuals showing them will in consequence have their reproductive capacities lessened more than others. There is, however, he states, one eugenic drawback to air warfare. That is, the fighting men themselves, who represent the genetically desirable element, are also very liable to be killed, and this danger must somehow be met by taking special care of them and their reproduction.

Readers, even those who may not yet be able to agree fully with the major, will at any rate be extremely thankful to him for his outspokenness in so clearly revealing his premises, his methods of reasoning and his ideals. And when they form judgments as to the nature of the "Rassenpflege" movement they will take into consideration the fact that this article has been published in the

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central organ of the "Gesellschaft für Rassenhygiene."

A reader of generalizing disposition, on going further into the arguments given, will, to be sure, find that all of them could be applied almost equally well, not merely to air warfare, but to modern warfare in general, in fact, to barbarism in general as opposed to civilization. That is, under barbarism, too, the dangers and stresses of life which bring out hidden weaknesses and which give occasion for disorderly acts are intensified. And these dangers and stresses are apt to fall more strongly on regions of greater economic distress. The same arguments, then, may really be used to recommend almost any conditions which we, in our naïveté, might otherwise judge to be undesirable. Thus, for example, spikes in the bed tend to eliminate weak backs. And in this more general form, we fear, the major's thesis is after all not so very unfamiliar, having been advanced by not a few of those unfortunates who have developed under specially comfortable (and hence really deplorable) conditions.

In presenting the viewpoint of aerogenics, the author mentions, as a kind of aside, that after all the spokesmen of "Rassenpflege" should not regard air warfare as desirable. This, indeed, seems a rather surprising attitude on the major's part, in view of the rest of his argument, and it does seem to be one weak point in his chain of reasoning, but we hope that his further researches will clear up this misunderstanding. Few great works establishing new branches of science spring into existence without a few flaws. An acquaintance with the history of war and of the methods of preparation for it does, to be sure, suggest an apparent reason for the discrepancy in question, inasmuch as it is a characteristic of those who make war to be very modest in disclaiming any desire for it, but in this case we feel sure that some more plausible explanation for his failure to draw the apparently obvious general conclusion will eventually be found.

S. G. LEVIT.

Maxim Gorky Medico-Genetical Institute,
Moscow.

The Prevalence of the Mental Defect

To the Editor, Eugenics Review

SIR,—I am grateful to Dr. Vernon for calling attention to an omission in my letter in April on comparative numbers of low-grade intelligence in different areas. The condensation of a letter inclines one to avoid elaboration; but I should have emphasized the sense in which I was using (as does he in his explanation) the Binet-Simon scale, as a separate measure or yardstick against which to set population percentages.

The fact he mentions of his having compared the intelligence levels assessed by much-used Continental and American tests is just the point I have

been seeking. It confirms my argument (April 1936) to find that Dr. Vernon, like Wildenskow and Brugger, finds these roughly comparable.

It is to be hoped that psychologists will, before long, agree on a use of terms which would make any confusion impossible in the sense of Dr. Vernon's criticism. The Committee of the British Psychological Society, which is collaborating with the International Standardization Committee (B.), may well achieve this, and I think Dr. Vernon must be concerned in the work of that committee.

His point about the American Army tests is of interest. It has been virtually cleared up by some earlier articles on migration of Professor Carr-Saunders, who has established that immigrants tend not to be a random sample of the country of origin: they are selected in part by the attraction of the new country, in part by home prospects. Put crudely, in our country the indigent is better off than anywhere else, and he stays with us. In the years of maximum exodus before the War, our most skilled workers realized the larger opportunities offered by the Industrial System in the U.S.A., where pay was by piece-work, and we lost much of our best stock by migration thither. The army tests were early criticised on the score of language producing inequalities. I earlier called attention to the point that as the English stood with Scandinavians and Germans very high and the Irish at the bottom of the scale, Carr-Saunders' contention seemed abundantly proved. This phenomenon is comparable to the less striking selections between urban and rural demonstrated in Dr. Cattell's article in the October issue: our home towns have been getting the "middlings," the U.S.A. and the Dominions the best, and our villages show a pitiable residue.

I hope that I am not misunderstood as suggesting that the original English stock is less intelligent than any other in Western civilization. Who dare make the proud assertion that it is the best? The acid test of achievement, however, shows that the combination of balanced temperament and intelligence gave us advantages sufficient to carry us as far as any race of which the world has records. It is from this angle that I plead for careful study of the position of our people as regards intelligence to-day; believing, as I do, that intelligence depends on biological prerequisites. The enterprising temperament to which I have referred constantly takes our best away and is probably in part responsible for the low birth-rate of the self-supporting part of the community, while it is undeniably responsible for the philanthropy which has provided the highest effective fertility in our least intelligent stock.

Should we not face the situation dispassionately, hoping even yet to be in time to reverse the trend which has, I still maintain, brought the intelligence quotient of the average of our countrymen to stand as much below the average of Northern Europe as do our assessed feeble-minded out-